

Notice of Allowability

Application No.

10/816,623

Applicant(s)

PETERSON, SCOTT B.

Examiner

Said Broome

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to After-Final filed 10/5/07.
2. ☒ The allowed claim(s) is/are 1-4, 6-24, 26-43, 45-60, 62-72, 79, 80, 82-85 and 87.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|--|--|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input checked="" type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date <u>10/30/07</u> . |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____ | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____. |

DETAILED ACTION

Response to Amendment

1. This office action is in response to an amendment filed 10/2/2007.
2. Claims 1, 6-8, 12, 18, 21, 26-28, 30, 37, 40, 45-47, 50-53, 57, 62-64, 66-69, 73, 79 and 84 have been amended by the applicant.
3. Claims 2-4, 9-11, 13-17, 19, 20, 22-24, 29, 31-36, 38, 39, 41-43, 48, 49, 54-56, 58-60, 65, 70-72, 74, 75, 77, 78, 80, 82, 83, 85 and 87 are original.
4. Claims 5, 25, 44, 61, 73-78, 81, 86 and 88-101 have been cancelled.

Examiner's Amendment

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Norman Klivans on October 30, 2007.

Amend the claims as follows:

Claims 1, 6, 7 and 40: In line 14 after the word "surface" delete the period (.) and insert the phrase ", each vertex being a coordinate in (x,y,z) in local space of the reference model, i and k being respectively the row and column of a matrix of the vertices."

Claims 8 and 45-47: In line 15 after the word “surface” delete the period (.) and insert the phrase “, each vertex being a coordinate in (x,y,z) in local space of the reference model, i and k being respectively the row and column of a matrix of the vertices.”

Claim 12: In line 26 after the phrase “ $P_{i,k}$ is the reference vertex in the world space of the reference model;...” delete the semicolon (;) and insert the phrase “, each vertex being a coordinate in (x,y,z) in local space of the reference model, i and k being respectively the row and column of a matrix of the vertices;”. In lines 29-30 after the phrase “...has a length equal to the average length of s and t ;”, insert the phrase “ s , r , and t each being a direction vector;”.

Claims 21, 26 and 27: In line 20 after the word “surface” delete the period (.) and insert the phrase “, each vertex being a coordinate in (x,y,z) in local space of the reference model, i and k being respectively the row and column of a matrix of the vertices.”

Claims 28, 57 and 62-64: In line 21 after the word “surface” delete the period (.) and insert the phrase “, each vertex being a coordinate in (x,y,z) in local space of the reference model, i and k being respectively the row and column of a matrix of the vertices.”

Claim 30: In line 22 after the phrase “...in the world space of the reference model;...” delete the semicolon (;) and insert the phrase “, each vertex being a coordinate in (x,y,z) in local space of the reference model, i and k being respectively the row and column of a matrix of the vertices;”. In lines 25-26 after the phrase “...average length of s and t ;”, insert the phrase “ s , r , and t each being a direction vector;”.

Claim 50: In line 17 after the phrase “...in the world space of the reference model;...” delete the semicolon (;) and insert the phrase “, each vertex being a coordinate in (x,y,z) in local space of the reference model, i and k being respectively the row and column of a matrix of the

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vertices;”. In lines 20-21 after the phrase “...average length of s and t ;”, insert the phrase “ s , r , and t each being a direction vector;”.

Claim 66: In line 24 after the phrase “...in the world space of the reference model;...” delete the semicolon (;) and insert the phrase “, each vertex being a coordinate in (x,y,z) in local space of the reference model, i and k being respectively the row and column of a matrix of the vertices;”. In lines 27-28 after the phrase “...average length of s and t ;”, insert the phrase “ s , r , and t each being a direction vector;”.

Authorization for an examiner’s amendment was also given in a telephone interview with Norman Klivans on November 15, 2007.

Amend the claims as follows:

Cancel claims 73-75, 77 and 78.

Allowable Subject Matter

Claims 1-4, 6-24, 26-43, 45-60, 62-72, 79, 80, 82-85 and 87 are allowed. The following is an examiner’s statement of reasons for allowance:

The prior art Lengyel et al.(US Patent 6,606,095), does not teach the following limitations of claims 1, 21, 40, 57: wherein at least one basis coordinate system comprises a triangle defined by the vertices $P_{i, k-1}$, $P_{i+1,k-1}$, $P_{i+1,k-2}$ where the reference vertex is $P_{i,k}$, and is an odd row of the surface. Therefore claims 1-4, 9-11, 13-17, 19-24, 29, 31-36, 38-43, 48, 49, 54-60, 65 and 70-72 are allowable.

The prior art, does not teach the following limitations of claims 6, 26, 45, 62: wherein at least one basis coordinate system comprises a triangle defined by the vertices $P_{i, k-1}$, $P_{i+1,k-1}$, $P_{i+1,k-2}$

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₂ where the reference vertex is $P_{i,k}$, and is an even row of the surface. Therefore claims 6, 26, 45 and 62 are allowable.

The prior art, does not teach the following limitations of claims 7, 27, 46 and 63: wherein at least one basis coordinate system comprises a triangle defined by the vertices $P_{i, k-1}$, $P_{i+1,k-1}$, $P_{i+1,k-2}$ where the reference vertex is $P_{i,k}$, and is in a last row of the surface. Therefore claims 7, 27, 46 and 63 are allowable.

The prior art, does not teach the following limitations of claims 8, 28, 47 and 64: wherein at least one basis coordinate system comprises a triangle defined by the vertices $P_{i, k-1}$, $P_{i+1,k-1}$, $P_{i+1,k-2}$ where the reference vertex is $P_{i,k}$, and is the leftmost vertex in a last and odd row of the surface. Therefore claims 8, 28, 47 and 64 are allowable.

The prior art, does not teach the following limitations of claims 12, 30, 50 and 66: wherein predicting the offset vertex comprises determining the offset vertex $P'_{i,k}$ from the

$$\vec{P}'_{i,k} = (\vec{P}_{i,k} - \vec{A}) * \begin{bmatrix} \vec{s} \\ \vec{t} \\ \vec{r} \end{bmatrix}^{-1} \begin{bmatrix} \vec{s}' \\ \vec{t}' \\ \vec{r}' \end{bmatrix} + \vec{A}'$$

equation:

where: $P_{i,k}$ is the reference vertex in the world space of the reference model; A, B, C are vertices of the basis coordinate system in the world space of the reference model, and $s=B-A$, $t=C-A$, and r is normal to s and t , and has a length equal to the average length of s and t ; A' , B' , C' are vertices of the basis coordinate system in the world space of the offset model and $s'=B'-A'$, $t'=C'-A'$ and r' is normal to s' and t' , and has a length equal to the average length of s' and t' . Therefore claims 12, 30, 50 and 66 are allowable.

The prior art, does not teach the following limitations of claims 18 and 79: wherein each difference comprises a vector having vector components, each vector component associated with an axis of a coordinate system, further comprising: reordering vector components of the differences so that vector components associated with each axis are stored contiguously. Therefore claims 18, 79, 80, 82 and 83 are allowable.

The prior art, does not teach the following limitations of claim 37: wherein storing the difference between the predicted offset vertex and actual offset vertex comprises reordering vector components of the differences so that vector components associated with each axis are stored contiguously. Therefore claim 37 is allowable.

The prior art, does not teach the following limitations of claims 51, 67, 84: wherein retrieving from the compressed animation model stored differences comprises: reordering vector components of the differences from being continuously stored for each axis of a coordinate system to being grouped into coordinate tuple form. Therefore claims 51, 67, 84, 85 and 87 are allowable.

The prior art, does not teach the following limitations of claims 52 and 68: retrieving from the compressed animation model stored differences comprises decompressing the differences into an uncompressed form using an entropy based decompression algorithm. Therefore claims 52 and 68 are allowable.

The prior art, does not teach the following limitations of claims 53 and 69: decompressing seed vertices into an uncompressed form using an entropy based decompression algorithm, and using the seed vertices as a reference vertices. Therefore claims 53 and 69 are allowable.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Said Broome whose telephone number is (571)272-2931. The examiner can normally be reached on M-F 8:30am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ulka Chauhan can be reached on (571)272-7782. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Said Broome/
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11/15/07


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